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EXAMINER	
HENDRICKS,K.	
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This is a communication from the examiner in charge of your application.
COMMISSIONER OF PATENTS AND TRADEMARKS

☒ This application has been examined ☒ Responsive to communication filed on 6-7-96 ☐ This action is made final.

A shortened statutory period for response to this action is set to expire 3 month(s), — days from the date of this letter.
Failure to respond within the period for response will cause the application to become abandoned. 35 U.S.C. 133

Part I THE FOLLOWING ATTACHMENT(S) ARE PART OF THIS ACTION:

1. ☐ Notice of References Cited by Examiner, PTO-892.
2. ☐ Notice of Draftsman's Patent Drawing Review, PTO-948.
3. ☐ Notice of Art Cited by Applicant, PTO-1449.
4. ☐ Notice of Informal Patent Application, PTO-152.
5. ☐ Information on How to Effect Drawing Changes, PTO-1474.
6. ☐ _____.

Part II SUMMARY OF ACTION

1. ☒ Claims 1-13 are pending in the application.
   Of the above, claims _____ are withdrawn from consideration.
2. ☐ Claims _____ have been cancelled.
3. ☐ Claims _____ are allowed.
4. ☒ Claims 1-13 are rejected.
5. ☐ Claims _____ are objected to.
6. ☐ Claims _____ are subject to restriction or election requirement.
7. ☐ This application has been filed with informal drawings under 37 C.F.R. 1.85 which are acceptable for examination purposes.
8. ☐ Formal drawings are required in response to this Office action.
9. ☐ The corrected or substitute drawings have been received on _____. Under 37 C.F.R. 1.84 these drawings are ☐ acceptable; ☐ not acceptable (see explanation or Notice of Draftsman's Patent Drawing Review, PTO-948).
10. ☐ The proposed additional or substitute sheet(s) of drawings, filed on _____. has (have) been ☐ approved by the examiner; ☐ disapproved by the examiner (see explanation).
11. ☐ The proposed drawing correction, filed _____, has been ☐ approved; ☐ disapproved (see explanation).
12. ☐ Acknowledgement is made of the claim for priority under 35 U.S.C. 119. The certified copy has ☐ been received ☐ not been received ☐ been filed in parent application, serial no. _____; filed on _____.
13. ☐ Since this application apppears to be in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under Ex parte Quayle, 1935 C.D. 11; 453 O.G. 213.
14. ☐ Other

EXAMINER'S ACTION

Part III DETAILED ACTION

The Examiner appreciates Applicant pointing out that throughout most of the Office Action, including the Summary Sheet, that claims 1-10 were rejected, instead of claims 1-11. This was obviously in error, and the Office regrets any inconvenience resultant therein.

Information Disclosure Statement

The information disclosure statement filed June 5, 1996 fails to comply with 37 CFR § 1.97(c) because it lacks either a certification as specified in 37 CFR § 1.97(e), or the fee set forth in 37 CFR § 1.17(p). It has been placed in the application file, but the information referred to therein has not been considered as to the merits.

Claim Rejections - 35 USC § 112

112 1st paragraph

Claims 1-7 and 9-13 are rejected under 35 U.S.C. § 112, first paragraph, as the disclosure is enabling only for claims limited to a reverse transcriptase (RT) from Escherichia coli, which RT synthesizes msDNA. See M.P.E.P. §§ 706.03(n) and 706.03(z).

The enablement of the specification, as far as one skilled in the art obtaining a particular single RT enzyme, is described above. The specification in no way enables one skilled in the art to produce a RT enzyme which is broadly encompassed by the instant claims. The election of species resulted in the election of a single genus of microorganism, namely Escherichia. The claims are not even limited to a single species or subset of microorganism under this broad genera. There are many more species of Escherichia other than the exemplified and enabled E. coli, namely E. blattae, E. vulneris, E. hermannii and E. fergusonii to name a few. Many of these individual "species" each have several strains and sub-species within their particular groups. Thus, the breadth of the elected invention alone is staggering.

Applicants' arguments filed 6-7-96 have been fully considered but they are not deemed to be persuasive.

Initially, applicants state that the Examiner has "apparently misread the claims" and "erroneously states" certain aspects of the invention. This is not agreed with and applicants' arguments are not deemed persuasive. For

applicants' benefit, the Examiner has recited below the paragraph of the rejection in which the summation of the invention and the specification occurs. The rejection is maintained for the reasons of record shown therein.

Again, the specification does not provide sufficient guidance, motivation or expectation of success (predictability) toward the isolation of another RT from another Escherichia source other than E. coli. To support this statement, it is important assess the teachings of applicants' specification. It is noted that at page 36 of the instant specification, applicants state that "by using one of the two screening tests identified above, one skilled in the art will readily determine whether any one of these bacteria contain retrons synthesizing msDNA." Applicants have not isolated these RT's. They have not even demonstrated that other RTs encompassed by the claims exist. At best, the specification has shown that there is a screening test to attempt to determine if an "retron synthesizing msDNA" exists, thus containing an RT. Once this retron is determined to exist, it must be identified and screened. Then any resultant RT must be produced and identified. The result is one skilled in the art is left to do the experimenting, screening, and further experimenting on their own, finally determining if such an RT exists, and then attempting to isolate such an RT after this. This simply does not provide one skilled in the art with sufficient enablement beyond the scope of that indicated within the specification. There is no guidance or (reasonable) predictability that would lead one skilled in the art to an RT other than that specifically exemplified in the specification. Thus, the specification is viewed as non-enabling considering the breadth of the claims, the amount of experimentation unduly necessary, the scarcity of guidance and/or working examples, and the unpredictable nature of the art.

This demonstrates that (a) the Examiner has not misread or misinterpreted the claimed invention or the specification, and (b) that applicants' instant claims are not enabled by the specification.

Again, the recitation of the conserved sequence(s) as shown in the claims, does not demonstrate to one skilled in the art where this short sequence might be located, or expected to be located. Also, with the recitations of claims 1-4 collectively, the RT is to somehow, somewhere and at 4 individual positions within the enzyme, contain the four "conserved sequences". The claims do not specify if they are to be in order, from claim 1 to claim 4, if they are random or if they are interchangeable, etc. It would require an undue amount of experimentation for one skilled in the art to attempt to determine where such a conserved sequence would be located within a potential RT. There is no guidance provided to lead one in the art to such a conclusion such that it would greatly enhance the chances of producing an RT according to applicants' invention. The working examples do

not provide answers to this dilemma. Finally, the specification does not provide a reasonable assurance or predictability that one skilled in the art would expect to find the listed conserved sequence(s) at a repeatable and consistent location within the enzymes encompassed by the broad language of the claims.

Applicants have stated, at page 9 of the response, that "the RT of the invention is adequately enabled with respect to any bacterium, irrespective of the amino acid sequence called for in" the claims. This is not deemed persuasive, as the claim specifically calls for these limitations, and thus one skilled in the art must locate and screen the candidate bacterium (of which there is little specific guidance for the choice of which bacterium) for the existence of msDNA, then subsequently locate, isolate and purify the RT, and determine if this RT is the RT which (a) synthesizes msDNA (versus other RT's with separate functions which are known to exist), and (b) contains the claim-limited and specified sequence of amino acids anywhere within its' structure.

Further then, claim 13, as well as claims 9-11, are not properly enabled for the reasons of record, similar to those reflected above. Applicants have not provided a sufficient amount of guidance toward the selection of candidate bacterium, out of the thousands of possibilities, which may contain the necessary msDNA to be screened for, in order to then begin to attempt to isolate the actual RT. For example, of those genus/species of bacteria that are given in the specification, page 33 of the specification demonstrates that only 9 of 114 of *P. mirabilia*, *K. pneumoniae* and *Salmonella* isolates actually tested positive in the screen for msDNA. Thus, not only is the selection of which bacterial genus and species immense, but the number of strains within those groups is extremely large. It then follows that the screening of such an enormous number of candidates of any bacterium for the existence of an RT (let alone the subsequent isolation) would require an undue amount of experimentation, and even then, the small number of positives expected, as taught by the specification, does not lead to a high expectation of success. It also follows that one skilled in the art is left with a huge amount of unpredictability as to where to look, short of "all bacteria known to humans", what to expect, and most importantly, one skilled in the art would

not be able to successfully predict the existence of an RT within those bacterium.

Again, applicants have taken a select few RTs from E. coli and/or M. xanthus, to which they hold patents to both, and compared certain areas of sequences within these RTs. This is reported in Figure 14. It is important, however, to bear in mind the difference between an invention and a discovery. Applicants, as their invention, have enabled (and received patents to) the actual RTs from these two microorganisms. They have also "discovered" certain areas of sequence similarity within these two types of RTs, and attempted to broadly claim these as well. The specification, however, does not enable one skilled in the art to attempt to locate an RT, from any bacterial source (elected Escherichia genus), that "comprises a conserved sequence of amino acid residues" shown in the claims. Claim 1 lists only 4 amino acids by which one skilled in the art is to attempt to locate and identify a particular, actual RT from, one which "is capable of" synthesizing msDNA. And one of the listed residues is actually a choice of two amino acids, thus actually not even limited to one sequence of four amino acids. One skilled in the art would have no way possible to attempt to screen, experiment, locate and isolate/purify such an enzyme with so little specific information regarding its characterization, as encompassed by the claims. The specification does not outline how one skilled in the art is to start with the information in the claim, in light of every bit of information in the specification, and locate a bacterial msDNA-synthesizing RT with merely a "conserved sequence" of four amino acids. The subsequent listing of short amino acid sequences (3 to four each, with several choices at several positions, drastically increasing the possibilities) in claims 2-4, and the recitations in claims 5-8 and 12 do little to solve or limit this issue.

112 2nd Paragraph

Claims 1-8 and 12 are rejected under 35 U.S.C. § 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

The current recitation in the claims 1-4 remains indefinite and confusing. Initially, claim 1, as an example of claims 1-4, Next, it is unclear as to where in the RT these sequences might be found. The claims state that the enzyme "has" the listed sequence; "has" and "having" are interpreted as closed language (i.e. the enzyme only "has" those residues). This is similar to "consists of" language, and thus the claims are incorrect and confusing as to how the enzyme only "has" 4 (8,10 or 12) residues.

Again, with claim 3 it is unclear as to how these sequences are to be "conserved". What are they conserved in? Which sequences? Is this a consensus sequence taken from some long list of other sequences? Also, with claim 3, there is still no recited reference figure or sequence to which this "conserved sequence" refers.

The generic sequences (ex. Tyr-Xaa-Asp-Asp) listed in the claims 1-4 and 12 are not in compliance with the Sequence Rules, as they recite more than 3 amino acids in a sequence, and thus must comply. Further, the claims 1-2 and 4 recite "as shown in Seq. ID No. 4, residues 168-171" (for example, claim 1), when this is a specific sequence of amino acids, and not a generic formula. Thus the claim language is in conflict.

Claim 12 states that the sequences "are arranged in order starting from the amino terminal end of the RT", meaning amino acid residue 1. This is in conflict with the recitation of the claims 1-4, as, for example, the sequence of claim 1 appears at residues 168-171, while the next sequence in claim 2 appears before these residues, at positions 96-99.

Claim 7 is again indefinite, as it recites that the RT "has the 61 conserved amino acid residues", while claim 1 recites that the enzyme only "has" 4 residues (and not "comprises", as applicants purport). The term "has" is interpreted as closed language, similar to "consists of". While it is assumed that claim 1 is incorrect as currently recited, given this interpretation, it still remains that instant claim 7 is indefinite.

Claims 5-8 are indefinite for the recitation of "common subdomains..." (claim 5), and "Figure 14". Claims reciting sequences should refer to SEQ ID #'s only. The phrase "common subdomains" is not specific and clear from the reference to Figure 14, as it does not specifically address that these are the boxed regions, or whatever regions are intended.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. § 103 which forms the basis for all obviousness rejections set forth in this Office action:

> A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.
>
> Subject matter developed by another person, which qualifies as prior art only under subsection (f) or (g) of section 102 of this title, shall not preclude patentability under this section where the subject matter and the claimed invention were, at the time the invention was made, owned by the same person or subject to an obligation of assignment to the same person.

The non-statutory double patenting rejection, whether of the obvious-type or non-obvious-type, is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent. *In re Thorington,* 418 F.2d 528, 163 USPQ 644 (CCPA 1969); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); *In re Van Ornam*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); and *In re Goodman*, 29 USPQ2d 2010 (Fed. Cir. 1993).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321 (b) and (c) may be used to overcome an actual or provisional rejection based on a non-statutory double patenting ground provided the conflicting application or patent is shown to be commonly owned with this application. See 37 CFR 1.78 (d).

Effective January 1, 1994, a registered attorney or agent of record may sign a Terminal Disclaimer. A Terminal Disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

Claims 1-13 are rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1-2 of U.S. Patent No. 5,320,958, and claims 1-7 of US Patent 5,434,070. Although the conflicting claims are not identical, they are not patentably distinct from each other because the instant claims are directed to a bacterial RT (elected) from Escherichia. The patented claims are both directed to a bacterial RT from Escherichia coli. Thus, the subject matter of the claims

overlaps and would have been obvious to produce from the teachings of the patents.

NO CLAIM IS ALLOWED.

Applicant's amendment necessitated the new grounds of rejection. Accordingly, **THIS ACTION IS MADE FINAL.** See M.P.E.P. § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 C.F.R. § 1.136(a).

A SHORTENED STATUTORY PERIOD FOR RESPONSE TO THIS FINAL ACTION IS SET TO EXPIRE THREE MONTHS FROM THE DATE OF THIS ACTION. IN THE EVENT A FIRST RESPONSE IS FILED WITHIN TWO MONTHS OF THE MAILING DATE OF THIS FINAL ACTION AND THE ADVISORY ACTION IS NOT MAILED UNTIL AFTER THE END OF THE THREE-MONTH SHORTENED STATUTORY PERIOD, THEN THE SHORTENED STATUTORY PERIOD WILL EXPIRE ON THE DATE THE ADVISORY ACTION IS MAILED, AND ANY EXTENSION FEE PURSUANT TO 37 C.F.R. § 1.136(a) WILL BE CALCULATED FROM THE MAILING DATE OF THE ADVISORY ACTION. IN NO EVENT WILL THE STATUTORY PERIOD FOR RESPONSE EXPIRE LATER THAN SIX MONTHS FROM THE DATE OF THIS FINAL ACTION.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Keith Hendricks whose telephone number is (703)308-2959.

Any inquiry of a general nature or relating to the status of this application should be directed to the Group receptionist, whose phone number is (703)308-0196.

KDH

KEITH D. HENDRICKS
PRIMARY EXAMINER
GROUP 1800

kdh
September 2, 1996